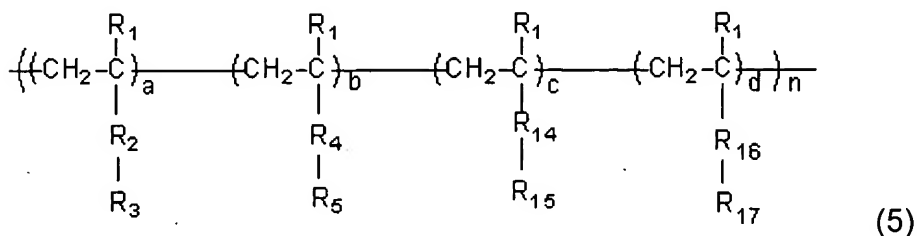


ABSTRACT OF THE DISCLOSURE

A polymer for a chemically amplified negative photoresist and a photoresist composition are provided. A representative polymer of the invention is a compound of formula 5:

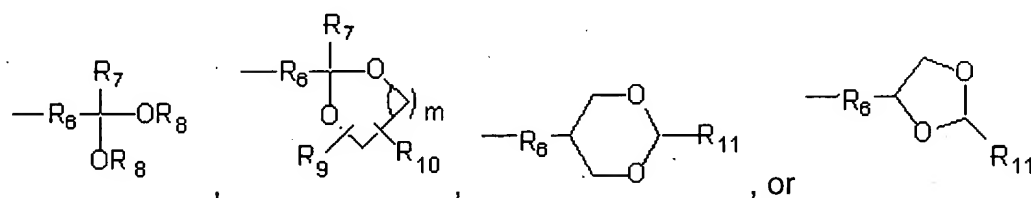


wherein:

R₁ is H or CH₃;

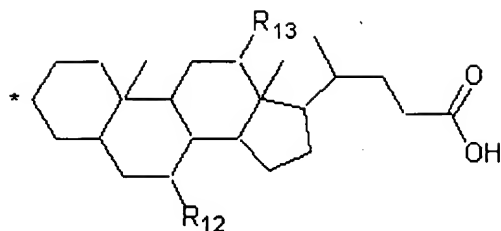
R₂ and R₄ are each independently (R)_α(CH₂)_βR' or (R)_α[(CH₂)_γO]_δR' (wherein, R is CO, CO₂, O, OCO, or OCO₂, R' is O, CO₂, or OCO₂, α is 0 or 1, β is 0 to 5, γ is 1 or 2, and δ is 1 to 5);

R₃ is represented by one of the formula:



wherein R₆, which combines an acetal compound and a vinyl compound, is a C₁-C₅ saturated alkyl, a C₁-C₅ ether, or a C₁-C₅ carbonyl; R₇ to R₁₁ are each independently selected from H, C₁-C₅ saturated alkyls, C₁-C₅ ethers, C₁-C₅ carbonyl groups, and C₁-C₅ alcohol groups; and m is a number ranging from 1-5; and

R₅ is represented by formula:



wherein R_{12} and R_{13} are each independently H or OH; and

* represents the bonding site at which the R_4 group is bonded.

R_{14} and R_{16} are each independently selected from a single bond $(R)_\alpha(CH_2)_\beta R'$ and $(R)_\alpha[(CH_2)_\gamma O]_\delta R'$ (wherein, R is CO, CO_2 , O, OCO, or OCO_2 , R' is O, CO_2 , or OCO_2 , α is 0 or 1, β is 0 to 5, γ is 1 or 2, and δ is 1 to 5); R_{15} is a hydroxyl group; R_{17} is a carboxyl group;

a, b, c, and d represent the mole ratios of each monomer, wherein a has a value of 0-0.5, b has a value of 0-0.9, c has a value of 0-0.3, and d has a value of 0-0.3, provided that $a+b+c+d = 1$; and

n represents the degree of polymerization of each polymer, and has a value of at least 2.